

Astronomy in the Life and Correspondence of Athanasius Kircher

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WHEN, LATE IN THE YEAR 1652, Marcaurelio Severini, professor of anatomy in Naples, wrote to a Jesuit father in Rome, he found in his correspondent “a resuscitated Pythagoras, an immortal encyclopaedist,” his scholarly effulgence comparable to that of “a newly discovered moon.”¹ Such hyperbole is admittedly a feature of seventeenth-century epistolary etiquette, but in Severini’s correspondent, Athanasius Kircher (1602–1680), we find a man who on occasion deserved, more than most, extravagant praise.

Certainly in the eyes of his wondering contemporaries Kircher, seen by Philipp von Zesen as “easily the Phoenix amongst the learned men of this century,”² strikingly merited such applause. Born a German, trained a Jesuit, Kircher took up residence in Rome in the autumn of 1633 under the benevolent eyes of Claude Fabri de Peiresc and Cardinal Francesco Barberini. Here he was to remain until his death in 1680. His life was one of incessant scholarship, punctuated only by the regular appearance of ambitiously erudite works in the spheres of natural sciences, antiquities, hieroglyphics, and medicine.³ He became the black-robed oracle of Rome, confidant of popes and emperors, correspondent of the leading scholars and minds of Europe and the world. Visitors to the Eternal City seldom left without attempting to see Father Kircher. His bulky works were greedily anticipated, his letters humbly solicited by, among other aspiring scholars, Leibniz.⁴

Kircher is a curious figure in the history of scholarship. In him we can find an intellect of width and depth, given to flashes of lucid perception of scientific truth. In contrast to this we note too a deep-rooted and childlike belief in the arcane and the miraculous, an uncomplicated acceptance of the written word, an often unswerving adherence to the tradition of orthodox scholasticism. Kircher’s achievements must be measured against the unpropitious nature of his training and environment: it is no

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¹ Pontificia Università Gregoriana, Rome, 568, fol. 274. Napoli, 7 Dec. 1652. Fourteen folio volumes of Kircher’s unpublished correspondence are preserved in the Archives (555–568) of the Pontificia Università Gregoriana (PUG) in Rome. I was enabled to work on them through the generosity of the Librarian, P. Marcus Dykmans, and the Archivist, P. Vincenzo Monachino.

² *Coelum astronomico-poeticum sive mythologicum stellarum fixarum* (Amsterdam, 1662), p. 377.

³ Thirty-eight separate and completed works are described by C. Sommervogel, *Bibliothèque de la Compagnie de Jésus* (Brussels/Paris, 1893), Vol. IV, pp. 1046–1077.

⁴ PUG 559, fol. 166. Moguntiae, 16 May 1670.

longer just to dismiss him solely as an academic privateer, as the purveyor of empty omniscience.⁵

Kircher's position in the history of astronomy derives positive value not so much from substantial personal involvement in the growth of a reawakening science, but rather from his unique role in contemporary intellectual life. As an established author of erudite treatises, he commanded respect and attracted lively attention. Against the background of Rome, Kircher could meet distinguished visitors and, of more importance, found himself firmly ensconced at the center of a worldwide net of Jesuit missionaries, priests, and father-confessors, whose varied factual communications regularly passed through his hands. It is this feature—his correspondence—which adds so much of value to Kircher's contemporary standing. From the combination of his correspondence, his own life, and his printed works a clear outline emerges of Kircher's relationship to the astronomical practices of the seventeenth century.

It would be surprising if Kircher had not shown interest in the broadening science of astronomy. His childhood and adolescence coincided with a series of explosive publications on newly postulated and discovered aspects of the solar system. Certainly Copernicus was long since dead, but the controversy and implications ignited by his *De revolutionibus orbium coelestium* (Nuremberg, 1543) were only now being fanned by the successive publications of Brahe, Kepler, and Galileo. Nor were less controversial aspects of the skies neglected. The year following Kircher's birth saw the first celestial atlas, the *Uranometria*, compiled by Johann Bayer; and we may assume that the school-boy Kircher would soon learn of the early optical classic *Opticorum libri sex* (Antwerp, 1613) by the Brussels Jesuit Franz Aguillon and the important treatise on meteors *De meteoris tractatus* (Paris, 1613) by Johann Geraldinus.

Kircher's early preoccupations in this field did not however concentrate on astronomy itself. He turned instead to the more sturdy and less topical study of sundials and other experiments in solar horology. Certainly, like many in his century, Kircher found himself fascinated by the constant problems of time, its segmentation, and its relationship to man. Possibly too his interest was first compelled by the ancient (c. 820 A.D.) sundial on the Michaelskirche in Fulda (where Kircher spent his youth in the Papal Seminary, 1611–1618), which popular tradition has always attributed to Hrabanus Maurus.⁶

Kircher's interest soon became more than theoretical. In 1623 he erected in the Jesuit College in Coblenz a square sundial, decorated with the signs of the zodiac and bearing the pious motto: "Ea fugit umbra: fugit tacito pede et Annus et Aetas."⁷ Later in the same year Kircher repeated this design on the tower of the Marienkirche in Heiligenstadt. (When seen in 1964, the device was weathered and unrestored but had remained intact in all parts.) In his last years in Germany (1629–1631), Kircher constructed two further sundials which are still to be seen on the south and east sides of the central tower of the old Jesuit university in Würzburg.

Of more direct astronomical interests we know little. Kircher's first documented observation took place during his four-year theological course in Mainz. Here, on 25

⁵ This is the traditional view propounded by A. Erman, *Allgemeine Deutsche Biographie* (Leipzig, 1882), Vol. XVI, pp. 1–7. We find a more mature and perceptive treatment in G. Reilly, "Master of a Hundred Arts," *Studies*, 1955, 44:357–468.

⁶ E. Zinner, *Alte Sonnenuhren an Europäischen Gebäuden* (Wiesbaden: F. Steiner, 1964), p. 23.

⁷ F. Reiffenberg, *Historia Societatis JESV ad Rhenum Inferiorem* (Cologne, 1764), Vol. I, p. 257.

April 1625 Kircher focused his simple telescope on the sun and noted twelve major and thirty-eight minor sunspots.⁸ Possibly Kircher was thinking of extending his observational studies when in 1631 he devised a portable tool for the measurement of earthly and heavenly bodies. Mindful of earthly progress, Kircher was careful to send an example of his "pantometrum" to Ferdinand III Archduke of Austria.⁹ This same device was later succinctly described: "with this may be measured length, breadth, heights, depths, areas, of both earthly and heavenly bodies etc."¹⁰

Kircher's inherent fascination for astronomy and the allied sciences gained fresh impetus in the autumn of 1631. When Würzburg was threatened by the marauding Swedish armies of Gustavus Adolphus, Kircher fled with his fellow Jesuit Andreas Wiegandt into France and came to rest in Avignon. Here various factors combined to redirect Kircher's interests to a science he had virtually neglected. There was now more time to devote to his own interests. The clear blue sky of Provence, likened by Kircher to "an Egyptian sky most favorable for the noting of celestial phenomena,"¹¹ afforded more consistent opportunity for direct observation.

Initially in Avignon Kircher directed his efforts toward designing a planetarium¹² on the smooth white walls of the Tour de la Motte, part of the Jesuit College. Through the cunning use of mirrors Kircher introduced the reflected light of the sun and the moon into the tower, on the inner walls of which he traced various uranographic projections, the principal constellations, the signs of the zodiac, and the hours of the day correlated with astronomical hours. In their correct positions were shown the latitudes of certain towns in the tropics, while the various meridians revealed the hours of the day in varying parts of the world. Kircher incorporated the full details of this "Horologium Aveniense astronomico-catoptricum" and of further horological and quasi-astronomical wonders in a work on catoptrics published in Avignon and dedicated generously to the city fathers. We may note here that the question of priority in the use of reflected light for sundials and allied machines was later, perhaps characteristically, to involve Kircher in controversy with the Minorite friar Emanuel Maignan. In the spirit of the age the whole issue became cloudy and uncertain, so much so that John Evelyn, on finding Maignan's work in the Trinità del Monte in Rome, could enthuse on "the Babylonish dials invented by Kircher the Jesuit."¹³

Of far greater importance in Avignon toward Kircher's understanding of astronomy was his contact with new minds and with scholars already experienced in the interpretation of the skies. Here he was visited by the German astronomer Johann Hevelius who, fifteen years later, was somewhat belatedly to thank Kircher for "the kindness which you showed to me in Avignon in 1632."¹⁴ Here he met the Hebrew scholar and astronomer Rabbi Salomon Azubins de Tarascon.¹⁵ Here, above all, he met the great humanist and intellectual entrepreneur Claude Fabri de Peiresc. Their relationship

⁸ *Ars magna lucis et umbrae* (Rome, 1646), pp. 3, 6, 8. (Amsterdam, 1671.)

⁹ C. Wegleiter, *Oratio de Palmaris seculi nostri inventis* (Altdorf, 1679), p. 73.

¹⁰ J. F. Reimann, *Versuch einer Einleitung in die Historiam Literariam* (Magdeburg, 1708), Vol. IV, p. 179.

¹¹ *Primitiae gnomonicae catoptricae* (Avignon, 1635), praefatio.

¹² This ambitious device is exhaustively des-

cribed in M. Chossat, *Les Jésuites et leurs œuvres à Avignon, 1563-1768* (Avignon, 1896), pp. 235-237.

¹³ E. J. de Beer, *The Diary of John Evelyn* (Oxford: Oxford Univ. Press, 1955), Vol. II, p. 373. For Evelyn's contemporaries the question was eventually settled by J. F. Nicéron, *Thaumaturgus opticus* (Paris, 1646), pp. 178-179.

¹⁴ PUG 557, fol. 346. Dantisci, 28 Aug. 1647.

¹⁵ G. Cohen-Salvador, *Un grand humaniste, Peiresc* (Paris: G. Couette, 1951), p. 166.

always remained that of patron and protégé. Here for the first time Kircher's immense mental energy was to be directed into meaningful channels. Peiresc's edited correspondence gives some idea of their intercourse between Aix and Avignon.

We learn of Kircher's presence in Aix in the early March of 1633, when Peiresc successfully engineered Kircher's introduction to Pierre Gassendi, a meeting persuasively called into being to observe an eclipse of the sun: "But if you are still here, we will detain him [Kircher] until the following week to wait for the Eclipse, which we will not be in a position to do if you are not here, destitute as we are of the instruments and other materials necessary for obtaining some benefit from our observations."¹⁶

Possibly in return for the hospitality demonstrated by Peiresc, Kircher lost little time in presenting his host in Aix with an exotic clock fashioned upon the counsel of an obscure Arab on the Marseilles waterfront—a clock deriving its motive power from the heliotropic revolutions of the seed of the solanum plant. Peiresc's enchantment knew no bounds: we find the whole apparatus eulogistically detailed in a letter to Mons. de Puy,¹⁷ and the same clock is noted in the inventory drawn up after Peiresc's death in 1638.¹⁸ Nor did Gassendi, impressed by Kircher as "one of really great erudition,"¹⁹ forget their initial meeting. In the August of the same year, he forwarded to "le bon père Athanase" via Peiresc copies of "my observations of the latest Eclipse."²⁰

Certainly the scholarly exchange between Peiresc and Kircher rose above the level of the mutual transmission of sundry observations. But here, inevitably, Kircher's rigid training and environment prevented substantial progress. In writing to Gassendi, Peiresc showed little hesitation in forwarding Kircher's highly favorable opinion of his new acquaintance. In recording Kircher's views, however, on "poor Signor Galileo," Peiresc stops short in some confusion: "this I would rather not divulge, believe me, out of respect, since the whole affair has until now been kept so secret in Rome."²¹ In his own letter, where he refers both to Peiresc and Gassendi as "friends of the Muses," Kircher describes a lengthy communication he has just received from Christoph Scheiner (10 July 1633). In some detail Kircher outlines and rhapsodically praises Father Scheiner's recently prepared polemical tract against Galileo (*Prodromus de sole mobili et stabili terra contra Galilaeum*, Rome, 1631). This is the section which Peiresc so tactfully suppresses. It is significant that Kircher's sentiments are, in the manuscript, heavily cancelled by red pencil strokes.²²

In September 1633 Kircher was called to the Jesuit College of Trieste. His hasty farewells in Aix gave Peiresc fresh food for thought, even though Peiresc at this time was preoccupied with the contents of a further letter from Christoph Scheiner, with its tone of reiterated persecution against Galileo: "he cannot abstain from attacking this poor old man even after having forced him to his knees and having him condemned, were it not for his retraction, to perpetual imprisonment."²³

Kircher's chief contribution to this final meeting in Aix contains an unusual ele-

¹⁶ Philippe Tamizey de Laroque, *Lettres de Peiresc*, 7 vols. (Paris, 1888–1889), Vol. IV, pp. 295–296. Peiresc to Gassendi, Aix, 2 Mar. 1633.

¹⁷ *Ibid.*, Vol. II, pp. 528–529. Aix, 2 May 1633.

¹⁸ P. Humbert, *Peiresc: Un amateur français* (Paris: Desclée, de Brouwer, 1933), p. 252.

¹⁹ Pierre Gassendi, *Opera omnia* (Lyons, 1658), Vol. V, p. 388.

²⁰ De Laroque, *Lettres*, Vol. IV, p. 338. Gassendi to Peiresc, Digne, 3 Aug. 1633.

²¹ *Ibid.*, p. 342. Peiresc to Gassendi, Aix, 12 Aug. 1633.

²² Bibliothèque Nationale, Paris (BN), Fonds français, No. 9538, fols. 227–228. En Avignon, 9 Aug. 1633.

²³ De Laroque, *Lettres*, Vol. IV, p. 354. Peiresc to Gassendi, Aix, 6 Sept. 1633.

ment of realistic objectivity. According to Peiresc he admits the unlikelihood and improbability of any substantial advance on or deviation from the theories of Copernicus, and in this respect quotes the recent and ineffectual attempts of the Jesuit astronomers Carl Malapertius and Cristoforo Clavius who, in Peiresc's words, were constantly "compelled and obliged to write in support of the basic theories of Aristotle, which Father Scheiner himself followed only out of his sense of duty."²⁴

A further point discussed in Aix, no doubt suggested by the speculative theories of Scheiner and Malapertius, was the nature and origin of sunspots. Kircher—and here we have an example of his strong inclination toward empiric and subjective theorizing—refused to acknowledge the possible validity of alternative theories and propounded "a third class of definition," much to Peiresc's scholarly unease, whereby "sunspots exist outside the body of the sun, like puffs of smoke arising from a furnace."²⁵

After a journey of hair-raising danger and peril, Kircher, en route for Trieste, succeeded in reaching Rome. Here, due to the intervention of both Peiresc and Cardinal Francesco Barberini—highly impressed onlookers of Kircher's apparent skill in the deciphering of Egyptian hieroglyphs—he was to spend the rest of his life. In early November Peiresc, still awaiting news from Rome, forwarded to Kircher in Italy the latest observations of Mercury noted by Gassendi.²⁶

By Christmas Eve, however, news had trickled through.²⁷ With his letter of 14 November, Kircher enclosed specimen eclipse observations made by Scheiner and requested Peiresc to forward them to Gassendi for his candid opinion. Here too, in a businesslike way, Kircher asks Peiresc to send to Scheiner, now in Vienna, copies of works by Malapertius and "a further volume on the motions of the earth in defense of Galileo."²⁸ Kircher had wasted little time in resuming his astronomical observations in Rome, and in Peiresc's eyes real progress would seem to have been achieved: "above all I found great pleasure in seeing what he says on the last page of his letter about his latest observations of the intermittent nature of sunspots." There can be no doubt that Peiresc was less pleased by Kircher's repeated fulmination against Galileo's theories "on the motion of the earth." One wonders too at Peiresc's reaction to Kircher's seemingly innocent remark on the printed works of Galileo, "whose name I noted moreover in your own library."²⁹

In Rome, Kircher's interests widened dramatically. News of his arrival, variously distorted, was reported by two separate sources to the aging, exiled Galileo.³⁰ Both letters, tardily written on 18 March 1634, concentrate on Kircher's horological brain-child, his sunflower-seed clock, but also discuss at length the new arrival's linguistic and mathematical skills. We find much the same admixture of admiration and contemporary news in a letter written about this time and sent by Scheiner. There is general talk of correspondence with Peiresc, of the success of the *Rosa ursina* (Bracciano, 1630). Scheiner confesses ignorance "of the Neapolitan Miracle," obviously already referred to by Kircher; and, in completing the contemporary picture, he

²⁴ *Ibid.*

²⁵ *Ibid.*

²⁶ *Ibid.*, p. 385. Peiresc to Gassendi, Aix, 10 Nov. 1633.

²⁷ *Ibid.*, p. 398. Peiresc to Gassendi, Aix, 24 Dec. 1633.

²⁸ Philip Lansbergius, *Commentarium in motum*

terrae diurnum et annuum (Middelburg, 1633).

²⁹ BN, Fonds français, No. 9538, fols. 230–233. Romae, 14 Nov. 1633.

³⁰ *Le Opere di Galilei*, edizione nazionale (Florence: G. Barbera, 1890–1909), Vol. XV, p. 46, letter by Jean-Jacques Bouchard; p. 65, letter by Raffaello Magiotti.

strongly voices his approval of the "promulgation of condemnation" meted out to Galileo.³¹ In the two letters to Galileo, we may note, there is no reference to Kircher as an incipient astronomer. The omission was not entirely coincidental. Despite his promising beginning, Kircher was never to develop into anything more than a dilettante astronomer, a type common to much of contemporary intellectual Europe.

In this spirit Kircher was to continue his observations and musings on the fringe of serious astronomy. With his fellow Jesuit Melchior Inchofer, Kircher observed the lunar eclipse of 27 August 1635.³² His scrutiny of the moon on this occasion, and the result of a subsequent joint survey of the sun in this year with Scheiner, were to be published in a later work.³³ In forwarding his readings to Gassendi, via Peiresc once more, Kircher generously noted the precise work being carried out by a young Roman astronomer, Gasparo Berti, "a young man of good will."³⁴

Kircher seldom lost the opportunity of noting all aspects of the sky. In May 1637, when travelling to Malta as father-confessor to Landgrave Friedrich von Hessen-Darmstadt, Kircher persuaded the ship's captain to break the voyage at Reggio. Here he busied himself with varied observations, principally readings of the declination of the magnetic pole.³⁵ Nor did Kircher's temporary absence from Rome remain unnoted. Raffaello Magiotto duly reported the departure to Galileo, remarking with some acerbity that Kircher had failed to carry out his promise of obtaining sunflower seeds suitable for Magiotto's own horological experiments: "this same good Father has gone off, all of a sudden, and I am left without the promised seeds."³⁶

Soon after his return from Malta, Kircher was visited in the Roman College by the English astronomer John Greaves, who was returning from Persia to Oxford.³⁷ A former practice was resumed when Kircher observed the solar eclipse of 1 June 1639.³⁸ A copy of his findings was promptly sent the following day to Gassendi.³⁹ These two incidents, mere moments in Kircher's growing whirl of academic and spiritual activity, summarize to a large extent much of the subsequent role of astronomy in Kircher's life.

Certainly Kircher retained a lifelong interest in astronomy and the allied fields of horology and optics. In 1643 he was known to be preparing a treatise "de prodigiosis horologiis,"⁴⁰ a work which would seem to have been elbowed aside by more pressing publications. Some of this material was later incorporated into a descriptive essay of 1650 on Egyptian water clocks.⁴¹ Nor did Kircher neglect more practical aspects of clock making. In 1656 Christina of Sweden could admire his store of "clocks which by vertue of the loadstone turn about with secret force,"⁴² while Robert Southwell, friend of Robert Boyle and later president of the Royal Society, noted in his diary of 1661, "the universall dyall. . . of Father Kircher call'd Bacon from his Excellence."⁴³

³¹ PUG 567, fol. 33. Viennae, 25 Mar. 1634.

³² G. Bigourdan, *Annales célestes du XVII^e siècle* (Paris: Gauthier-Villars, 1901), p. 107.

³³ *Mundus subterraneus* (Amsterdam, 1665), pp. 62, 64.

³⁴ De Laroque, *Lettres*, Vol. IV, p. 560. Peiresc to Gassendi, Aix, 28 Oct. 1635.

³⁵ *Ars magna lucis et umbrae* (1671), pp. 704–705.

³⁶ *Le Opere di Galilei*, Vol. XVII, p. 80, in a letter dated Roma, 16 May 1637.

³⁷ T. Smith, *Vita Joannis Gravii* (London, 1707), p. 9.

³⁸ Bigourdan, *Annales célestes du XVII^e siècle*, p. 132.

³⁹ P. Gassendi, *Epistolae* (Florence, 1727), p. 403.

⁴⁰ P. Ribadaneira, *Bibliotheca scriptorum Soc. JESU* (Antwerp, 1643), p. 92.

⁴¹ *Oedipus Aegyptiacus* (Rome, 1652–1654), Vol. I, pp. 252 ff.

⁴² G. Priorati, *History of Her Majesty Christina Alexandra Queen of Swedeland* (London, 1658), Vol. VII, p. 431.

⁴³ British Museum, London, MSS Egerton, 1632, fol. 57.

Kircher's experiments in optics and telescopes were often daring and adventurous—a frequently unscientific aspect which had, the English antiquarian John Bargrave records, unfortunate repercussions in the workshop of “myn here Westleius” in Nuremberg: “The gentleman spoke bitterly to me against Father Kercherius a Jesuit at Rome (of my acquaintance) saying that it had cost him above a thousand pounds to put his optick speculations in practice, but he found his principles false, and showed me a great basket of glasses of his failings.”⁴⁴ Such damaging testimony apart, Kircher did achieve some substantial progress with his prototype telescopes and microscopes, a fact generally recognized by his contemporaries⁴⁵ and amply proved by the numerous requests and offers one finds in his correspondence.

In the first edition of Kircher's optical encyclopedia, the *Ars magna lucis et umbrae* of 1646, we also find some evidence of firsthand astronomical observations. “Essentially concerning the moon or lunar and planetary rays of light” is an early chapter heading, a topic which gradually leads Kircher to discuss, with gruesome examples, the wondrous and varied influences on plants and men of sundry astral rays. As proof of such a thesis, Kircher adduced here evidence of vaporous exhalations he had observed emanating from the moon: “you will note too at the extreme edge of the lunar disk some unknown trembling, smokelike shape which you might interpret as an exhalation,” (p. 14). More prosaic illustrations in the text show varied aspects of the moon's face and include, preceding Hevelius, two depictions of Jupiter (p. 17). Here too we find Kircher anticipating Gassendi in publishing views of Saturn, shown however without the complete ring, which was not to be fully, if deviously,⁴⁶ explained by Huygens until 1655.

The only work by Kircher wholly devoted to astronomy appeared in 1656: a stout (464 pp.) quarto volume gratefully dedicated to Christina of Sweden, for the aid of whose “obstetrical hands” Kircher had already felt constrained to appeal.⁴⁷ This is his *Iter exstaticum*, in which Kircher, accompanied by the Good Angels Cosmiel and Theodidactus, tours the solar system, setting down abundant descriptions, patently derived from classical cosmogony, of the various planets which they visit in turn.⁴⁸ Although Kircher himself soberly defined the work as “my thoughts and opinions on the nature, composition and structure of the heavenly bodies,”⁴⁹ and from distant Mexico the missionary father Francisco Ximenez declared it to be “the offspring of consummate scholarship,”⁵⁰ its general reception was strangely mixed.

The book was an idyll, a celestial Arcadia where Kircher's fancies roamed at large, liberating on occasion a quantity of pleasing speculations.⁵¹ Among the unscientific,

⁴⁴ J. Bargrave, *Pope Alexander VII and the College of Cardinals* (London: Publications of the Camden Society, 1867), pp. 92, 133.

⁴⁵ J. Zahn, *Oculus artificiales teledioptricus, sive telescopium* (Würzburg, 1685), Vol. I, pp. 74 f.

⁴⁶ Huygens' correct solution was initially in the form of an alphabetical anagram. Kircher himself was to receive a similar conundrum forwarded from Huygens by Gottfried Aloysius Kinn: “Admovere oculus distantia sidera nostras vvvvvvvcccrhhbqx.” Kinn confidently expected a rapid solution: “You, most ingenious Oedipus, who possess the secret of the Sphynx,

will easily elicit the meaning.” PUG 557, fol. 248. Reichenbachii, 4 Jan. 1656.

⁴⁷ PUG 561, fol. 50. Romae, 11 Nov. 1651.

⁴⁸ *Itinerarium Exstaticū, quo mundi opificium, id est, coelestis expansi, siderumque . . . compositio et structura . . . nova hypothesi exponitur . . . interlocutoribus Cosmiele et Theodidacto* (Rome, 1656; Würzburg, 1660, 1671).

⁴⁹ PUG 561, fol. 58. Roma, 15 June 1656. Letter to Grand Duke of Tuscany.

⁵⁰ PUG 562, fol. 14. Angelopolii, 20 Apr. 1661.

⁵¹ We find a more prosaic Kircher in several astronomical essays presented in manuscript to Pope Alexander VII: (a) “Erimanno: de astro-labi compositione” (Bibliotheca Vaticana, Rome,

such sentiments, combined with the elegance of style and untroubled flow of the narrative, found a certain approbation.⁵² In direct contrast to such aesthetic considerations, we may note the terse summary of this work made by Christiaan Huygens: "nothing but a heap of idle unreasonable stuff."⁵³ Elsewhere Huygens belabors Kircher's adherence to "that idle fancy of Aristotle" and, with some perception, comments that "if Athanasius Kircher had dar'd freely to speak his mind, he could have afforded us other-guess things than these."⁵⁴ In passing, we note that in a letter written to Kircher, Huygens reveals nothing of the animosity he felt toward the *Iter exstaticum*. It is in fact a communication curiously devoid of scholarly references. Huygens, writing in Italian, stresses instead his tiredness and boredom, to relieve which he must "pass my time in recalling my memories and perusing your books." This summary of Huygens' "taedium vitae" is concluded by a reiteration of the warm personal feeling he has for Kircher: "in me you will always find a fanatical devotion to your person."⁵⁵

Despite Huygens' trenchant remarks on Kircher's ostensible sense of restraint, it is interesting to note that the carping demands of censorship were not fully avoided. Certain deletions were made before publication. Kircher's statement that it would be in God's power to have created similar worlds to ours at various infinite distances from the earth aroused some controversy⁵⁶ until vindicated by Melchior Cornäus, a former student with Kircher in Paderborn, in a vigorous and successful appendix to the Würzburg edition of 1671. This is the only occasion on which Kircher fell foul of the religious censor.

When we turn to Kircher's industrious army of correspondents we may note that few were as eloquent as Cornäus, as outspoken as Huygens. An uneasy silence prevailed on the subject of the *Iter exstaticum*, and of all Kircher's works it is the one least discussed. But this unnatural reticence was not allowed to spread to other aspects of astronomy. Kircher's astronomical correspondence may be loosely divided into groups concentrating on (1) general observations and varied reports, including the noting of eclipses, (2) sightings of comets and the airing of sundry problems, and (3) communications from more eminent contemporary astronomers.

A wide range of Kircher's correspondents periodically indulged in forwarding astronomical observations to Rome. Often such readings were utilized by Kircher, or, in turn, sent on to other contemporaries. It is of interest to note the variety of sources of what was obviously fruitful information. In 1639, for example, Hermann Crumbach included in his letter to Kircher sample astronomical observations sent to him from Malabar,⁵⁷ and in a similarly helpful way Johann Ciermanns, en route for missionary work in China, could volunteer his services as astronomer and geographer.⁵⁸

Unfortunately, Father Ciermanns was to die in Lisbon before he could travel to the Far East; nevertheless Kircher was still to receive detailed readings from Goa and

Chigi, F. IV.64); (b) "Judicium de antiqua Ms. de Sphaera" (Chigi, J. VI.225); and similarly (c) G. da Sacrobosco, "Tractatus de Sphaera. Judicium" (Chigi, E. IV.130).

⁵² D. G. Morhof, *Polyhistor sive de notitia auctorum et rerum commentarii* (Lübeck, 1688), p. 347.

⁵³ Christiaan Huygens, *Oeuvres complètes* (Paris, 1888), Vol. XXI, p. 811.

⁵⁴ *Celestial Worlds* (London, 1698), Vol. II, pp. 101-102.

⁵⁵ PUG 555, fol. 160. Osterholm, 27 Nov. 1661.

⁵⁶ Two manuscript attacks on Kircher's work are the following: Biblioteca Nazionale, Rome, Gesuit, 1331/15, "Mira Kircheri in suo Itin. Exstat," and Biblioteca Universitaria, Naples, MS Brancacciano. I.E. 12.c.30, "Dubitationes aliquot observatae in Itin. Exstatico."

⁵⁷ PUG 566, fol. 32. Coloniae, 3 Oct. 1639.

⁵⁸ PUG 557, fol. 50. Lovani, 7 Mar. 1640.

"near Indo-China" compiled by a colleague of Adam Schall, the theological polemicist Martino Martini.⁵⁹ Nor was Kircher neglected by friends in more hospitable surroundings. From Tours and Rouen the prolific Jacques Grandami sharply questioned Kircher with a melange of queries on astronomy and magnetism,⁶⁰ while from Paris the mathematician Pierre Bourdin combined astronomical readings with bland chatter on the activities of P. Marin Mersenne and a discursive selection "from a tumult of celestial experiments."⁶¹

Lengthy, abstruse letters were a commonplace in the seventeenth century. We find another example in the rambling communication from Lorenz Mattenklöth, who mentions his own interest in astronomy and politely asks for Kircher's aid in the "correct observation of the skies."⁶² There is a more incisive note in the letter sent by the authority on optics Jean François Nicéron, during his return from Rome to Paris in 1640. Regrettably he had been unable to obtain accurate firsthand sightings in Florence: "in truth I could observe with no exactness at all in Florence" because of a virulent outburst of plague "which is ravaging that province." He promised more substantial results from Lyons and Paris.⁶³

In Cologne, Johann Grothans reported a similar failure to record observations, balked this time by continuously overcast skies.⁶⁴ Lest Kircher should doubt his genuine enthusiasm, Grothans convincingly transmitted copious notes of astronomical relevance culled from a recent treatise by Adriaen Metius.⁶⁵ We have some idea of the tenor of Kircher's reply when we find a second letter from Grothans acknowledging Kircher's "exhortations on the observing of future eclipses."⁶⁶

Other correspondents needed no such prompting. The Oriental linguist and lexicographer Amatus de Chezard regularly reported his progress in the study of Arabian astronomy⁶⁷ and on one occasion excitedly gave a detailed account of his observations of "most minute asteroids."⁶⁸ An exhaustive and often verbose observer in Agra, Antonio Ceschi, justified his lengthy letters and informative comments with the complaint: "Father, it is incredible how many crass errors are to be found in our tables."⁶⁹

Letters of similarly factual content were also received by Kircher from a former pupil, Nicolaus Mascardi, who left Rome for Chile in 1652. Four years later Mascardi sent a letter describing the Southern constellations and referring to comets observed in the vicinity of the Straits of Magellan: "on the wonder of the Southern skies and the beauty of stars and planets unknown in Europe."⁷⁰ In an undated letter he draws Kircher's attention to the pioneer work of Valentine Stansel, "noteworthy mathematician and former literary associate of mine," on the observation of comets from Bahia in Brazil.⁷¹ Mascardi himself at this point adds some three closely written sheets of astronomical observations.⁷²

Other observations were more explicitly described. We may note Kircher's growing

⁵⁹ PUG 567, fol. 189. Macai, 1 Nov. 1642.

⁶⁰ PUG 557, fol. 400. Turonibus, 9 May 1640.
PUG 567, fol. 190. Rothomagi, 17 Oct. 1642.

⁶¹ PUG 567, fol. 76. Parisiis, 4 Mar. 1640.

⁶² *Ibid.*, fol. 159. Monasterii, 8 Mar. 1640.

⁶³ PUG 557, fol. 383. Lugdunii, Kal. Maii 1640.

⁶⁴ *Ibid.*, fol. 41. Coloniae, 1 Mar. 1640.

⁶⁵ *Primum mobile astronomice* (Amsterdam, 1635).

⁶⁶ PUG 667, fol. 79. Coloniae, 1642.

⁶⁷ *Ibid.*, fol. 207. Alepi, 1 Aug. 1643.

⁶⁸ *Ibid.*, fol. 247. Alepi, 5 Apr. 1644.

⁶⁹ *Ibid.*, fol. 154. Agrae, 24 Sept. 1648.

⁷⁰ PUG 564, fol. 89. Chile, 14 Mar. 1656.

⁷¹ V. Stansel, *Legatus Vranicus ex orbe novo in veterem, h.e. observationes Americanae cometarum* (Prague, 1683).

⁷² PUG 564, fol. 89^v.

reputation for omniscience in a letter sent by a noble acquaintance from Avignon. Tondutus Sanlegerius, Duke of Blaynac, believing friendship superior to time and distance—"the bonds of our friendship yielding in no way to the interval of time and space"—directed Kircher's attention to the eclipse of Mercury noted at Naples on 20 May 1630 by Gassendi and Ismael Boulliau. His request for further elucidation and a disquisition on the significance of such eclipses⁷³ highlights part of the role Kircher was to play in the epistolary dissemination of knowledge and information.

Further planet sightings were received by Kircher from Sir John Murray, soon after the Royalist's release from prison in Ingolstadt. These readings, of the moon, Mars, and Saturn, taken by "someone unknown to me in Florence," had been in turn passed on to Murray by Jacques Viva.⁷⁴ Devious and unreliable as such a method of transmitting information might appear, it was part and parcel of the enquiring, if ramified, scientific spirit of the age.

We find a similar relationship underlying a letter from Balthasar Conrad of Prague, who sent in 1642 descriptive observations of the moon and Jupiter, obtained with the help of Johann Marcus Marci and the revised instruments of Tycho Brahe.⁷⁵ Some three years later Conrad forwarded his observations of the recent lunar eclipse and politely asked Kircher to return details, where known, of eclipses sighted in China and all results of observations "on the visible diameter of both the moon and the sun."⁷⁶

Eclipses were in fact observed with a universal enthusiasm where scientific objectivity could be easily mislaid. Early in his career Kircher seems to have become an acknowledged if unofficial clearinghouse for all eclipse sightings. Even when in Avignon, Kircher received from Pierre François Chifflet an unsolicited list of all eclipses noted in 1631.⁷⁷

This was only a beginning. In 1642, for example, Kircher received four separate reports of the April lunar eclipse. From Würzburg the theologian Henricus Marcellius stressed the clear visibility ("it being a serene night") during the eclipse.⁷⁸ Theodor Moretus, professor of mathematics in Prague, added that his sighting had been witnessed by an imposing array of notabilities, including Johann Marcus Marci and Dionysius Niceron, Prefect of the Imperial Treasury.⁷⁹ Antoine Valat combined with his readings his convinced recognition in Kircher of the new spirit of Clavius and Grienberger.⁸⁰ The fourth contributor to this flood of documentation, the Austrian poet and Jesuit Michael Staudacher, forwarded a more prosaic account: his letter was tersely summarized by Kircher as "an account of the eclipse in 1642, on the 14th April."⁸¹

Nor did this conclude the year's harvest of reports. From Münster Heinrich Modersohn was to dispatch early in 1643 lengthy accounts of two subsequent eclipses, reinforcing his own sightings with appended and apposite extracts from a treatise by Jacob Cruickel.⁸² It was no doubt knowledge of these and other reports which led Georges Fournier to approach Kircher for information on eclipses sighted abroad for eventual inclusion in his own comprehensive *Hydrographia seu de arte navigandi*

⁷³ PUG 557, fol. 396. Avenione, 20 Aug. 1640.

⁷⁴ *Ibid.*, fol. 26. Parisiis, 12 Mar. 1645.

⁷⁵ *Ibid.*, fol. 27^v. Pragae, 1 Nov. 1642.

⁷⁶ *Ibid.*, fol. 29. Pragae, 18 Feb. 1645.

⁷⁷ PUG 567, fol. 266. Bruxellae, 24 Jan. 1632.

⁷⁸ *Ibid.*, fol. 58. Herbioli, 19 Apr. 1642.

⁷⁹ PUG 561, fol. 174. Pragae, 29 Apr. 1642.

⁸⁰ PUG 557, fol. 359. Tolosae, 10 May 1642.

⁸¹ PUG 567, fol. 153. Tridenti, 26 Apr. 1642.

⁸² PUG 557, fol. 38^v. Monst. i. W., 29 Jan. 1643.

(Paris, 1643). The same letter contains too his request for one of Kircher's "optical tubes" to further his own astronomical explorations,⁸³ while a second letter is devoted to his praises of the achievements of Gassendi and Boulliau, in whom he sees "men honored in all literature."⁸⁴

Often, complete sightings could not be made. In 1648 Don Vincentius Mutz of Majorca succeeded only in recording the first phase of the lunar eclipse of 25 October before cloudy conditions intervened.⁸⁵ The doctor and Latin poet Pierre Petit was more fortunate in Paris with the solar eclipse of 12 August 1654,⁸⁶ although observers of the same eclipse in Würzburg were thwarted by adverse visibility: "here no one could discern with any accuracy on account of the turbulence of the atmosphere."⁸⁷ In Ingolstadt, on the other hand, this celestial spectacle was clearly observed and inspired the Jesuit poet Jacob Balde to compose an elegant and witty critique of contemporary life and manners.⁸⁸

One of the last accurate sightings received by Kircher was that of the lunar eclipse of 30 October 1659, recorded by the eighty-year-old Gottfried Wendelinus, sometimes called the Ptolemy of his age.⁸⁹ Certainly Kircher did receive more, from correspondents such as Ferdinand, Prince of Liechtenstein, from the Polish Jesuit Stanislas Solski, from the imperial father-confessor Gottfried Aloysius Kinn. But such reports, like those of innumerable other more ephemeral correspondents, remain devoid of any scientific basis, merely recording the eclipse in a passing phrase and including no further information. The news of an eclipse sighting in correspondence of this nature frequently seems a stylized formula, to be conveniently used in rounding off letters.

The advent of comets was described with more animation. Andreas Brobavig, of Vienna, who sighted a comet on 28 October 1639 in the company of the imperial father-confessor Philipp Müller, accompanied his report with an elaborate diagram. Brobavig attributes the scientific shortcomings of his news to the brief appearance of the comet: "it had the shortest of lives."⁹⁰ In a letter from Andreas Kobavius the incidence of the February comet of 1640, sighted in Palermo, fades into a commonplace. For Kobavius has a problem: he wonderingly observes, "here in Vienna the magnetic declination from the pole is nil," a fact which stubbornly remained constant, despite a diversity of attempts—"I have attempted it on several days, in several ways."⁹¹

Giacomo Bonvicino had no such annoying idiosyncratic puzzles for Kircher's attention. His prosaic announcement of the current comet, however arrestingly introduced—"on the Sabbath day of 21st Dec., around the second hour of the night. . ."⁹²—contrasts strongly with the gloomy news of Gerard Hansen the following year. Hansen, in recording the appearance "in our Germany" of a comet, is seized by foreboding and recollects the ominous comet of 1634, "which had the most mournful results." He wonders with trepidation what "threatening and novel blows from heaven" are heralded by the celestial visitation.⁹³ Kircher was to receive more factual information on this same comet from Johann Schega in the Netherlands—"the comet

⁸³ PUG 567, fol. 84. Parisiis, 29 Mar. 1642.

⁸⁴ PUG 566, fol. 112. Parisiis, 18 Apr. 1642.

⁸⁵ PUG 568, fol. 79. Maioricae, 19 July 1649.

⁸⁶ PUG 557, fol. 285. Parisiis, 28 May 1655.

⁸⁷ PUG 577, fol. 220. Herbipoli, 21 Oct. 1654, letter from Vitus Erbermann.

⁸⁸ *De eclipsi solari anno 1654. Die XII.*

Augusti in Europa a pluribus spectata tubo optico (Munich, 1662).

⁸⁹ PUG 563, fol. 225. Gandavi, 22 Sept. 1660.

⁹⁰ PUG 567, fol. 20. Viennae, Kal. Jan. 1640.

⁹¹ *Ibid.*, fol. 205. Viennae, 20 Feb. 1640.

⁹² *Ibid.*, fol. 280. Genuae, 21 Dec. 1652.

⁹³ *Ibid.*, fol. 221. Spirae, 20 Feb. 1653.

has been observed even in these parts"; his precise details remain however devoid of apocalyptic premonitions.⁹⁴

The more spectacular comet appearing from 20 December 1664 to 11 March 1665 was keenly observed by Kircher from Rome and subsequently described at length in a printed broadsheet circulated by him to his astronomically minded correspondents.⁹⁵ Both the comet and Kircher's report produced mixed sentiments. In Naples the findings of "such a maestro" and their "miraculous results" were lauded by the Conte di Diano.⁹⁶ Ferdinand, Prince of Liechtenstein, returned Kircher's compliment by describing at length the impressive tail of the comet—"its tail inspired terror"—adding that he had almost missed observing the comet because of its awesome speed.⁹⁷

The comet's velocity was also dwelt on, with some awe, by Jean Caramuel de Lobkowitz. In one of his frequent letters Lobkowitz inquiringly demanded of Kircher "whether this one comet's course was above or below the sun" and did not hesitate to append his own lengthy and illustrated explanation of the comet's path.⁹⁸

Philipp Müller was another recipient of Kircher's "opuscula de cometa." After modestly transmitting his own notes on the comet, he could observe, sagely and approvingly, and no doubt on behalf of his august spiritual ward, Leopold: "your treatise on the Comet pleases us."⁹⁹ Müller's sunny benignity was in turn eclipsed by the brooding reaction of Vito Scafili to this same comet. Scafili's letter warns of a dire future: "the settings of all evil tragedies derive from the influence of comets."¹⁰⁰

Occasionally correspondents were more specific and topical. The historian Carlo Moscheni, seeing in Kircher "a noble and famous astronomer," reproached him nevertheless in an aggressive and polemical vein for the views and opinions of "that aged and learned Rev. Father Chris. Claudius of your Society."¹⁰¹ A similar appeal for academic support may be noted in the confident approach of Albert Bartholomäus, who hastens to remind Kircher of the binding ties of "our mother Germany." His problem is a tract by Juan Eusebio Nieremberg. He seeks Kircher's elucidatory advice after detailing some dozen propositions annoyingly contained in the treatise, such as "(f) the Planets do not revolve around a central earth," adding with reference to the remainder of the work, "and more of this nonsense."¹⁰²

We find a more mature outlook and a greater familiarity with the contemporary astronomical climate in a letter from the Danish philologist Johann Rhodius. Here Rhodius mentions receiving a work by the astronomer and mathematician Christian Longomontanus¹⁰³ which included "a solid tribute to your scholarly standing." He describes his "astronomical negotiations" with Johann Fabri Mattilensi and refers to a letter full of similar observations which he had received from Ismael Boulliau in Smyrna. Rhodius concludes by alluding to yet another of his correspondents, the itinerant English astronomer Thomas Herschell, who, in a letter from Paris, had included a request: "he commands me to salute you fervently."¹⁰⁴

Other correspondents were more insistent and remained in regular contact. After

⁹⁴ PUG 561, fol. 149. Bruxellae, 8 Feb. 1653.

⁹⁵ A copy of this "Osservazione della Cometa" is in Paris: BN, Fonds français, n.a. 10638, fol. 187. Similarly, at Kircher's instigation, Gioseffo Petrucci compiled *Fisiologia Nuova della Natura delle Comete l'anno 1664* (Rome, 1665).

⁹⁶ PUG 555, fol. 229. Napoli, 22 Mar. 1665.

⁹⁷ *Ibid.*, fol. 187. Pragae, 29 Apr. 1665.

⁹⁸ *Ibid.*, fol. 169. Napoli, 14 Jan. 1665.

⁹⁹ PUG 563, fol. 73. Luxemburgi, 25 Apr. 1665.

¹⁰⁰ *Ibid.*, fol. 27. Trapani, 30 Nov. 1666

¹⁰¹ *Ibid.*, fol. 119. Anconae, 6 Aug. 1665.

¹⁰² PUG 557, fol. 31. Ex Hispania, 30 July 1645.

¹⁰³ *Rotundi in plano, seu circuli, absoluta mensura* (Amsterdam, 1644).

¹⁰⁴ PUG 557, fol. 154. Patavii, 24 May 1647

Kircher's hasty departure from Avignon in 1633, a large stock of sunflower seeds remained behind. Antoine François Payen, pointing out that "a sunflower seed does not retain for long the virtue of revolving like the plant," naïvely inquired of "the Sun of our age" how to dispose of this legacy of inanimate husks.¹⁰⁵ Some six months later, in a rather less humble tone, Payen confided to Kircher news of improved horological experiments with lupin seeds.¹⁰⁶ Apart from an impassive note in 1642, urging Kircher to persevere with his observation of eclipses "for the common good of astronomy and geography,"¹⁰⁷ Payen did not write again until 1655. Then, in a more soberly independent style, Payen acknowledged his receipt of the *Oedipus Aegyptiacus*, in which the section on "Egyptian astronomy" with its "curious and refined findings" had particularly pleased him. He mentions too—so that we are left in no doubt as to his consuming interest—that he has recently received eclipse observations from Riccioli in Bologna.¹⁰⁸

Payen's last letter—now brisk and businesslike—was written in 1666, when he forwarded five printed proof sheets depicting a lunar eclipse, ultimately intended for Christina of Sweden. Payen, diplomatically thanking Kircher for "the observations of the comet of 1664 and of the eclipse of the moon on the 20th July 1665," wonders if Kircher might correct the sheets, which have already been examined by Honoratio Fabri and François de Gottignies.¹⁰⁹

We are not to suppose that Kircher remained aloof from contact with the more dedicated astronomers of his day. From Rome Kircher was able, as is now obvious, to transmit invaluable, otherwise frequently inaccessible items of information. This was the relationship Kircher enjoyed with Giovanni Battista Riccioli, professor in Bologna and author of one of the most popular astronomical works of the seventeenth century.¹¹⁰

Most of Riccioli's letters are in fact acknowledgments of Kircher's supply of information on eclipses, comets, and meteors. In an earlier letter we find Riccioli both congratulating Kircher "vehemently" on his return to good health "for the benefit of the literary world" and thanking him for his "liberal communications of eclipse observations." Riccioli, who often quotes and warmly endorses the findings of Tycho Brahe, forwarded with this letter¹¹¹ the instruments used for his observations of the lunar eclipse of 14 April 1642. The following month Riccioli records¹¹² the arrival of observations carried out by Kircher in Cologne and Paderborn (between 1618 and 1623) and later¹¹³ describes the generous help and support offered to him in Bologna by the astronomer and physicist Francesco Maria Grimaldi. In 1648 one of his letters¹¹⁴ talks enthusiastically of progress made on the *Almagestum novum*, while from a note written some five years later we find that Kircher is still forwarding readings and observations: "I heartily thank Your Reverence for observations received."¹¹⁵ Riccioli's last letter¹¹⁶ to Kircher discusses observations made in the Southern Hemisphere and summarizes in part the basic contents of his own contribution to this subject.

One of Riccioli's academic colleagues in Bologna was the professor of astronomy,

¹⁰⁵ PUG 568, fol. 255. Avignon, 7 Jan. 1634.

¹⁰⁶ *Ibid.*, fol. 9. Avenione, 15 Kal. Jun. 1634.

¹⁰⁷ PUG 567, fol. 413. Avenione, 4 June 1642.

¹⁰⁸ PUG 568, fol. 111. Avenione, 25 Aug. 1655.

¹⁰⁹ PUG 563, fol. 236. Parigi, 11 June 1666.

¹¹⁰ *Almagestum novum astronomiam veterem et novam complectens* (Bologna, 1651).

¹¹¹ PUG 561, fol. 177. Bononiae, 5 July 1642.

¹¹² *Ibid.*, fol. 182. Bononiae, 30 Aug. 1642.

¹¹³ *Ibid.*, fol. 174. Bononiae, 22 Dec. 1646.

¹¹⁴ *Ibid.*, fol. 181. Bononiae, 16 Dec. 1648.

¹¹⁵ *Ibid.*, fol. 200. Bononiae, 13 Feb. 1653.

¹¹⁶ PUG 558, fol. 32. Bononiae, 26 Feb. 1661.

Gian Domenici Cassini, later to become, at the express invitation of Louis XIV, director of the observatory of the Académie des Sciences in Paris. Cassini's relationship with Kircher was terse and businesslike: his letters unlike those of Riccioli are devoid of personal news or references to mutual friends. Here, too, but more baldly, we find Kircher in the role of purveyor and provider of information. Cassini wrote from Bologna in 1666, thanking Kircher for transmitting a selection of his observations on the orbital revolution of Jupiter.¹¹⁷ A second letter, mentioning recent work on the determination of the meridian, including notes on a lunar eclipse and recent sightings of Venus, was received by Kircher soon after Cassini's arrival in Paris.¹¹⁸ There was no further correspondence. In his last decade of life Kircher was to turn away from many of his earlier interests, devoting himself rather to spiritual and meditative matters; this sedate orientation is abundantly illustrated both in his correspondence and in his printed works.

It is unfortunate that Cassini's rise should coincide with Kircher's intellectual and physical decline. We find a more happy timing in Kircher's relationship with the Danzig astronomer Johann Hevelius.

The two had met in Avignon in 1632. Hevelius initiated their "commerce in letters" in 1647 with a letter¹¹⁹ in which he describes the pride and honor he feels in his contact with such a famous scholar: "for your writings are most famed throughout the whole world." He urges that Kircher's erudition should no longer remain hidden—"everything which until now has been concealed within your sharp mind should be brought forth for the public good"—and he humbly requests copies of all observations of planets, comets, and eclipses known to Kircher. In return, Kircher obediently reiterates his own stupefaction at Hevelius' learning and expresses his pleasure at the proposed contents and layout of the *Selenographia*,¹²⁰ taking care to exclaim at some length over what was to him the most pleasing aspect of the treatise—the "most exquisite engravings cut for all time in metal."¹²¹ It seems likely that Kircher derived this advance information from a second correspondent in Danzig, the mystic poet and philosopher Abraham von Frankenberg, who in March 1647 announced the imminent publication of Hevelius' work and detailed, with some awe, the nature of "a volume adorned with more than 150 steel engravings."¹²² Praise such as this possibly impelled Hevelius to forward with his next letter a series of engraved "effigies Lunae,"¹²³ a thoughtful gesture echoed the following year by tactful inquiries on the progress of Kircher's musical compendium, the *Musurgia universalis* of 1650 (Rome).¹²⁴

In his second letter, Kircher is able to inform Hevelius, "I have seen your *Selenographia*, a work most worthy of your genius."¹²⁵ This copy had been sent by Frankenberg. In his note of thanks, Kircher promises, "in controcambium," to give both Frankenberg and Hevelius copies of his *Musurgia universalis*. Here too Kircher describes the favorable reception accorded to the *Selenographia* in Rome: "when seen in

¹¹⁷ PUG 563, fol. 313. Bononiae, 9 May 1660.

¹¹⁸ PUG 560, fol. 160. Parisiis, 17 July 1671.

¹¹⁹ PUG 557, fol. 346. Dantisci, 28 Aug. 1647.

¹²⁰ *Selenographia sive lunae descriptio* (Danzig, 1647), described on another occasion by Cyprian Kinner as "indubitably a work worthy of being a future ornament of the Vatican Library." PUG 557, fol. 237. Elbingae, 14 Sept. 1647.

¹²¹ J. E. Olhoffius, *Excerpta ex literis illust. et.*

clariss. virorum ad J. Hevelium (Danzig, 1683), p. 14. Letter dated Romae, 14 Feb. 1648.

¹²² PUG 557, fol. 432. Ad ostium Vistulae, Mar. 1647.

¹²³ *Ibid.*, fol. 336. Gedani, 4 May 1648.

¹²⁴ *Ibid.*, fol. 344. Dantisci, 7 Apr. 1649.

¹²⁵ Olhoffius, *Excerpta*, p. 17. Letter dated Romae, 20 June 1649.

this theatre of the world your work was eagerly promoted by men of high distinction."¹²⁶ The copious praise is now tempered by Kircher's awareness of his own academic standing: "I fully agree with what you have written on the nature and essence of heavenly bodies." Lest Hevelius should possibly misinterpret this handsome gesture of support, Kircher pointedly adds, "as you are well able to see from Book I of my *Ars magna Lucis et Umbrae*" (1646).

Some eight days before this letter was written in Rome, Hevelius had forwarded to Kircher from Danzig a personal copy of the *Selenographia*.¹²⁷ Nor does Hevelius omit—although deprecatingly seeing his work as "the expression of our hallucinations which may be most accurately censured by others"—to point out the usefulness of such a text for future illustration in the teaching of astronomy. Apparently Hevelius received no immediate acknowledgment of this complimentary copy, since he wrote again, questioningly, some nine months later, in a letter principally devoted to exploring the range of optical instruments offered by the Roman craftsman Eustachio Divini. Approvingly, Hevelius here singles out Riccioli's *Almagestum novum*, which he has seen in synopsis, for special praise and requests information of "anything similar which has recently been produced by the literary world."¹²⁸

In the last letter from Hevelius known to us, he patiently records his daily anticipation of receiving Kircher's *Musurgia universalis*, a work whose erudition "and immensely stupendous labor" he cannot doubt. Hevelius had also failed to receive several lenses promised by Divini, a fact which he understandingly attributes to the "dangers and perils of the journey." Through Kircher, Hevelius here orders from Divini a telescope 45 palms in length, not costing more than 70 imperial talers. We hear too of the interest with which he is awaiting Riccioli's *Almagestum novum*: "I am awaiting this work most avidly."¹²⁹ In a postscript, Hevelius refers to a letter received from Kircher, of 30 April 1650, in which Kircher had described the transmitted copy of the *Selenographia* as "noticeably torn and spoilt by the rain," and he adds that he has already dispatched a second copy.

Kircher's hurried answer to this letter has been preserved.¹³⁰ He thanks Hevelius for praising his *Musurgia universalis*, before turning to talk of the current comet: "we are all prepared to trace this new comet throughout the whole of Europe." This in turn leads Kircher to deliver his verdict on Riccioli's treatise: "a striking work and unique specimen of astronomical exactitude." In the question of the Divini telescope, Kircher confesses his uncertainty of the respective merits of the "tube of 45 palms in length" and the smaller "tube of 36 palms." Somewhat unrealistically he submits his doubts to Hevelius' considered judgment.

Certainly Hevelius continued writing to Kircher. In 1655 we find Kircher acknowledging "your truly gracious gift" sent from Danzig. Although exact details are lacking, we find in Kircher's admiring gratitude a further intriguing if imprecise description: "it pleases everyone, that which you have dealt with so diligently, exactly, and with such refinement: that potent doctrine which you were the first to detect and to teach on the oscillation of the moon."¹³¹

¹²⁶ *Ibid.*, p. 14. Letter dated Romae, 8 Nov. 1648.

¹²⁷ PUG 568, fol. 3. Gedani, 12 June 1649.

¹²⁸ PUG 557, fol. 342. Gedani, 12 Mar. 1650.

¹²⁹ PUG 568, fol. 120. Gedani, 7 Oct. 1652.

¹³⁰ Staatsbibliothek, Marburg a. Lahn, Darmstaedter Dokumentensammlung, F.2.c. 1646 (1). Letter dated Romae, 22 Feb. 1653, raptim.

¹³¹ *Ibid.*, (2). Romae, 30 Jan. 1655.

Kircher's last known letter to Hevelius was written in 1665 and asks for Hevelius' views on the recent comet—"opinion of the phenomenal celestial comet of this year." In his opening lines Kircher apologizes for "the manifest imbecility of my mind" in forwarding a work he describes as "a pamphlet by me, on the nature of comets, encouraged by the constant urgings of countless princes."¹³² Possibly this letter was in answer to a specific request by Hevelius, who at this time was busy preparing his *Cometographia* of 1668 (Danzig). In the remainder of this short letter Kircher refers to his own *Iter exstaticum*, casually dismissing sundry attacks on it as "the ravings of astrologers," and concludes by describing three unusual comets, "in truth, the hallucinations of just one of all the astronomers in Rome," seen in Rome that same year. Kircher ends his letter hurriedly and, one feels, abruptly: "I have innumerable letters to write, I must stop writing."¹³³

If the tone of this brief letter seems lacking in warmth, we find ample recompense in a letter written some seven weeks later to the Polish astronomer Stanislaus Lubienetski. Kircher's praise for Hevelius rests here on his *Prodr omus cometicus* (Danzig, 1665). Hevelius' latest work compels Kircher's well-qualified respect for the "immense and forceful industry shown by the author's consistent power in abstruse argument." His admiration is however not so extravagant as to be blind: he questions Hevelius' assertion that a "conglomeration of small stars" might falsely resemble a comet. Such academic doubts do not, however, influence his wholehearted praise for the veteran astronomer, "whom I have observed grow from youth to manhood in the pragmatic, industrious and lengthy study of astronomy." Proudly he recalls to Lubienetski his first meeting with Hevelius, "whom I first got to know 32 years ago in Avignon."¹³⁴

This same period is essentially that of Kircher's own participation in the rise to respectability of astronomy throughout Europe and the world. Kircher's name is missing from most histories of astronomy; his small role is overshadowed and obscured by greater names. There is one consolation, however. Kircher's name can never be forgotten and may indeed achieve new prominence from man's new practical preoccupation with the moon. For, thanks to the industry and fair-minded zeal of Riccioli, we may still read, in any gazeteer of the moon: "Kircher, a great crater, west of Bailly, its walls rise 18,000 feet above the floor."¹³⁵

¹³² BN, Fonds français, n.a. 10638, fol. 187.

¹³⁴ Olhoffius, *Excerpta*, p. 107. Romae, 25 July 1665.

¹³³ *Ibid.*, n.a. 1640, fol. 59. Romae, 8 May 1665.

¹³⁵ H. P. Wilkins, *Moon Maps* (London: Faber & Faber, 1960), p. 22.